Blood Stem Cell Finding Could Yield Practical Results for BMT

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A finding by CIRM-funded researchers at the University of California Santa Cruz sounds pretty esoteric, but could be immensely practical for patients facing a grueling Bone Marrow Transplant (BMT).

Hematopoietic, or blood-forming, stem cells really have one preferred home. They tend to stick to their niche in the bone marrow, with relatively few circulating in the blood stream at any one time. That is why BMT has generally required anesthesia to go in and harvest bone marrow to get the stem cells buried within it. Lately, physicians have been trying to bypass this painful step by giving repeated injections of drugs over time to get the stem cells to leave the bone marrow and circulate in the blood stream where they can be harvested much more easily. But so far, this is still not very efficient and requires the multiple injections.

The UCSC team, lead by Camilla Forsberg, found that a rare molecule, Robo4, anchors the stem cells in the marrow. A drug that blocks Robo4 could be a safer and more effective way of getting stem cells out of the marrow and into the blood circulation where they could be harvested.

In a press release from UCSC Forsberg said:

> "If we can get specific and efficient inhibition of Robo4, we might be able to mobilize the hematopoietic stem cells to the blood more efficiently. We're already working on that in the second phase of the project."

Another practical gain may come out of the teams work. Unlike most other types of stem cells, hematopoitic stem cells (HSCs) are very difficult to grow in the lab. They want that comfy home in the bone marrow. Knowing the role of Robo4 might let researchers fluff up the couch in those petri dishes and make the blood forming cells feel more at home. Much more could be learned about HSCs, much more quickly, if that became true.

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